

## ABSTRACT OF THE DISCLOSURE

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2 DC margin of a latch of a circuit under design is determined by performing three simulations. A  
3 simulation is performed to find the trip voltage of the forwarding inverter of the latch. A second  
4 simulation is performed to find the one margin of the latch. Lastly, a third simulation is performed to  
5 find the zero margin of the latch. During each of the simulations to find the one margin and the zero  
6 margin, the worst case input signal path from the various driver circuit elements and signal paths  
7 within the circuit under design is determined analytically by accumulating weighted resistance of each  
8 of the circuit elements along the signal paths. The weights assigned to the circuit elements are  
9 empirically determined based on the topology configuration of each of the circuit elements, e.g., the  
10 type circuit element, the signal being passed through the circuit element and whether a threshold  
11 voltage drop occurs between the drive circuit element and the pass circuit element.